water. They don't weigh enough to come down, so there they hover. This alone is curious, but there's more. Even if a normal circus seal could be induced to float upward, perhaps having been inflated with great quantities of helium gas before being sent out, it would be unlikely to do anything else more than just wobble in place up there a bit. Again it's not so for the immensely smaller perfume. On the size scale of a hovering perfume molecule the normal atmosphere in the house, invisible to us, is a maelstrom of large flying pellets. These pellets are the air molecules, and there are so many of them, belting in from so many sides and so fast, that the hovering perfume molecule is knocked higher and higher. A hovering seal bombarded with thousands of discarded tin cans and popcorn boxes from disgruntled fans in the cheaper seats might suffer the same effect, but for the perfume molecule the incoming pellets are numbered not in the thousands but in the many, many billions. Its departure is very rapid indeed, with individual perfume molecules being propelled to over 180 miles an hour from the impacts. That's what will whap into the man's nose when he sniffs. The bobbing grease ball becomes a dot quickly receding from view.

If a storm is approaching the house there will be less air in the bedroom (that's what an approaching low pressure system means), the perfume will have less blocking its way once it gets going, and the grease balls will recede below even faster. Such faster moving scent will reach

waiting noses more quickly. Daub on perfume on a stormy night and it will smell more strongly, and be noticed faster than on a sunny day. The effect is even stronger in high altitude cities like Denver or La Paz, where the air pressure is always low and so any perfume once applied will be even more quickly spread out. Naturally, the more energetic perfume molecules—they all have a certain amount of quivering vibration—are the ones that will get to take off first, and that means the ones left behind after the first wave of departure will be preferentially the ones that by chance were cooler, more sluggish, than the rest. That could mean the end of the perfume's favorable wafting effect long before the dinner guests even arrive, except for the precaution of pouring the stuff on those points at wrist and neck where the body's arteries come close to the surface. Blood in those arteries is carried at blood-warm 98.6 F, so any perfume poured atop gets heated for free by those giant heating coils down below. The shallow lake of water warms up, the bobbing grease balls on top heat too, and the sluggish leftover perfume molecules resting on the grease are stirred from their lethargy and given the heat boost that will send them floating then jetting up too.

Equally odd on the micro level is the anti-perspirant the man is engrossed with while the woman is applying her perfume. START Anti-perspirants do not work by jamming little particles into the openings of sweat pores in the armpits. That might work if sweat shot out of your body's sweat

pores in miniature geysers, but on the micro-level of the skin, geysers, hoses and all the other usual ways we think of water emerging from a pore do not exist. Everything's too small. There's no way the incipient sweat water could build up a high enough pressure in its sub-surface tubes to flow. This is an odd limitation, but useful. If sweat gushed out of us like water out of a tube, then all parts of our body aiming downwards would be perpetually leaking—feet, armpits, fingertips, and chin—while only those always aiming up—shoulders, scalp, and little else—would be dry. Rather, sweat emerges because it's tugged out. It has a negative electric charge as it hovers in its little beads inside, and as the surface of the sweat pores has a positive charge when excited the result is that the sweat ooze is pulled out. It's like yanking out a sausage from a tight tunnel. 1st Stop

Enter the aluminum. Falling off from the roll-on anti-perspirant tube, landing on the crushed skin surface newly contoured by the pressure of the applicator, it short circuits the whole sweat-extruding operation. Aluminum flecks, which are the key ingredient in anti-perspirants, are negatively charged. That means the extra furry cloud of negative electrons they carry around with them counterbalances the normal positive charge on the skin surface. There's no pull on the sweat sausage any more. The aluminum is even likely to have a little left over to poke down the sweat pore tunnel and electrically repel the negatively charged water waiting deeper inside—like a hand pushing

the tunneled sausage deeper. There's a crackle, some static, the equivalent of sparks, and the whole system is shut, short-circuited and out of operation for hours. The sweat caught inside dissolves back into the body, crumbling through cracks in the sweat tubes like water from a leaky hose. (This theory is even termed the leaky hose theory by cosmetologists, because of this final water-leaking phase.)

So much for the anti-perspirant. For the deodorizing effect we expect of these concoctions a little perfume is mixed in, more in sprays than roll-ons because of the general ineffectiveness sprays have in controlling sweat due to their carrying so little aluminum. There's also a nice dose of insecticide and bactericide in the mixture, chemicals that are near-identical to the poisons in your garden shed, and which here are murder on any soft, unshelled creatures in their way. Rubbed on from the deodorant these chemicals are as acid as lemon juice. The furry and rounded bacteria normally resident in your armpits are wiped out, whole colonies coated with the poison and left to suffocate where they rest hugging the armpit hairs. Most go in 30 minutes, but as some are especially tough, it will be up to two hours after applying the mixture, say just about the dessert stage in dinner, that the hardiest and oldest residents of the environment there stop struggling and fall dead. With them out of the way there's no more odor creation, as it's their defecation of ammonia that produces the smell we're trying to avoid in using these armpit slaughtering agents. 2nd Stop

In time though the bacteria come back. A hurried

smear of anti-perspirant will have coated all the ones grasping directly on the hairs, but it will do little against the bacteria that were cunningly hanging from the hairs on slender mucus threads. These lucky ones escape in clumsy Tarzan fashion, by letting loose and falling on to the shirt or other material below. There they rest until the worst of the poison has been worn away, and then, when the bearer is kind enough to stretch or twist, will be brought up again on the shirt to start off new colonies in the armpit. Some that hid in the base of the hairs emerge too. The hastily doused wearer is neatly re-infecting himself. 3rd stop

Even if the anti-perspirant has not been put on in scanty quick dabs, even if it has been steamrollered back and forth in great sludgy swathes, then there still won't be a guarantee of permanent armpit peace. Indeed, such chemical slaughter comes back to haunt the perpetrator. The poison contained in commercial deodorants is so strong that when applied thickly it doesn't just kill the bacteria grasping to the hairs, doesn't just kill the ones lying on the skin surface below, but soaks into the skin like First World War chlorine gas to hunt out and get great numbers of the meekest, non-ammonia producing bacteria hiding deep down. As a result populations from elsewhere in the body migrate up and take over. These are not designed for the armpit, have no predators to keep them in check there, and so can spread to tremendous numbers, happily exuding the odoriferous ammonia as their predecessors did, and de-

manding even more anti-perspirant than before. Washing with soap and water avoids this problem, for it clears the region for at least a while, and always leaves enough Tarzan escapees to start over again later when the worst stresses of the day are over.

Leaving the man in such moments of self abuse, we return to the woman, perfumed and dressed for the forthcoming dinner, and with only one or two more ornamental details remaining to affix. To understand the nail polish being reached for at her cosmetic table one has to consider the dearth of billiard balls in 19th-century America. A competition was announced to provide a substitute for the increasingly rare and expensive ivory ball, and it was to win this award that an American inventor, John Wesley Hyatt, came up with the synthetic substance known as nitrocellulose resin. This proved not quite ideal for billiard balls as it explodes when struck sharply—in a later lecture Hyatt recounted receiving a letter from a Colorado saloon keeper thanking him for the new billiard balls, but noting that whenever they were hit hard they would flash, so that everyone in the saloon would pull out their gun, slowing play considerably—but with certain refinements it was good enough to found the modern plastics industry. Nitrocellulose itself survives in nail polish; watered down so that it's unlikely to explode, yet still abrasive enough to burn through the outer layers of a woman's nail and provide the solid covering needed in the chosen dyes.

What more could anyone want to complete the eve-